

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference RJW/6170203	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, Item 5 below.	
International application No. PCT/GB 03/03715	International filing date (day/month/year) 27/08/2003	(Earliest) Priority Date (day/month/year) 28/08/2002
Applicant  NEWCASTLE UNIVERSITY VENTURES LIMITED		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 6 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

2  
☐ None of the figures.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB 03/03715

## Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

A fuel cell ( 1 ) having an electrode comprising an electrocatalyst ( 32 ) on a support, wherein the support is a mesh ( 30 ) of conductive material such as a metal, metal alloy and metal composite ( e.g. titanium or titanium alloy ), is disclosed, as well as a method of operating such a fuel cell by contacting a fuel and an oxidant on said electrode. The electrolyte of the fuel cell may be an ion exchange membrane.

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/GB 03/03715

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01M8/04 H01M8/10 H01M4/86

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 538 608 A (FURUYA NAGAKAZU) 23 July 1996 (1996-07-23)	1-7, 10-14
Y	column 4, line 11 - column 4, line 25 column 5, line 5 - column 5, line 17 column 5, line 38 - column 6, line 17; figures 12,17,22	8,9
X	US 5 300 165 A (SUGIKAWA HIROFUMI) 5 April 1994 (1994-04-05)	1-4,6,7, 10,13,14
Y	column 2, line 56 - column 3, line 60 column 6, line 29 - column 6, line 37 column 11, line 1 - column 11, line 13 column 16, line 35 - column 16, line 54; figures 18,19	8,9
	----- -/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

2 December 2004

Date of mailing of the international search report

21/12/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Crottaz, O

## INTERNATIONAL SEARCH REPORT

Intern. Application No.

PCT/GB 03/03715

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E, L	WO 03/093535 A (CHRISTENSEN PAUL ANDREW ; UNIV NEWCASTLE VENTURES LTD (GB); SCOTT KEIT) 13 November 2003 (2003-11-13) page 4, line 1 - page 4, line 10 page 6, line 5 - page 6, line 20 page 11, line 19 - page 11, line 20 page 13, line 15 - page 14, line 31 claims 1-7,10 "L", so quoted as doubt on priority -----	1-7,10, 11,13,14
P, X	US 2002/150812 A1 (KAZ TILL ET AL) 17 October 2002 (2002-10-17) paragraphs '0003!', '0078!; figure 3 -----	1-7,10, 11,13,14
X	US 6 328 875 B1 (WEINBERG NORMAN L ET AL) 11 December 2001 (2001-12-11) column 11, line 27 - column 11, line 58; figure 8 column 15, line 53 - column 16, line 50 -----	1-11,13, 14
X	GB 1 227 762 A (GENERAL ELECTRIC) 7 April 1971 (1971-04-07) page 3, lines 1-33 -----	1-3,5-7, 10,13,14
X	FR 2 735 991 A (MITSUBISHI ELECTRIC CORP) 3 January 1997 (1997-01-03) page 11, line 20 - page 13, line 4; figure 1 -----	1-7,10, 13,14
X	US 4 529 670 A (FINDL EUGENE) 16 July 1985 (1985-07-16)  column 4, line 26 - column 4, line 62 claims 1-4; figure 1 -----	1-3, 5-10,13, 14
X	US 4 448 856 A (GIBNEY ANN ET AL) 15 May 1984 (1984-05-15) column 3, line 53 - column 4, line 17 column 4, line 27 - column 4, line 39; example 1 -----	1-10, 12-14
X	US 3 215 562 A (GERALD HINDIN SAUL) 2 November 1965 (1965-11-02)  column 3, line 35 - column 3, line 63 column 4, line 15 - column 4, line 45 column 5, line 29 - column 5, line 54; figure 5 -----	1-3, 5-10,13, 14

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern Application No

PCT/GB 03/03715

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5538608	A	23-07-1996	JP 3310737 B2	05-08-2002
			JP 7090663 A	04-04-1995
			JP 7211326 A	11-08-1995
			JP 7207481 A	08-08-1995
			JP 7220728 A	18-08-1995
			JP 7220729 A	18-08-1995
US 5300165	A	05-04-1994	JP 2274869 A	09-11-1990
			JP 3130393 A	04-06-1991
			JP 7006076 B	25-01-1995
			JP 3130394 A	04-06-1991
			JP 7006077 B	25-01-1995
			JP 2081564 C	23-08-1996
			JP 3130395 A	04-06-1991
			JP 7116635 B	13-12-1995
			DE 68925580 D1	14-03-1996
			DE 68925580 T2	19-09-1996
			EP 0392082 A2	17-10-1990
			ES 2085269 T3	01-06-1996
WO 03093535	A	13-11-2003	WO 03093535 A2	13-11-2003
US 2002150812	A1	17-10-2002	DE 10112232 A1	19-09-2002
			AT 275290 T	15-09-2004
			DE 50200907 D1	07-10-2004
			EP 1239528 A2	11-09-2002
US 6328875	B1	11-12-2001	US 6315886 B1	13-11-2001
			AU 767548 B2	13-11-2003
			AU 3112000 A	26-06-2000
			BG 105679 A	28-06-2002
			BR 9915992 A	04-09-2001
			CA 2355346 A1	15-06-2000
			CN 1329576 T	02-01-2002
			CZ 20012002 A3	15-05-2002
			EE 200100303 A	15-08-2002
			EP 1150921 A1	07-11-2001
			HU 0104664 A2	28-03-2002
			ID 30239 A	15-11-2001
			JP 2002531704 T	24-09-2002
			NO 20012804 A	07-06-2001
			NZ 512645 A	25-10-2002
			PL 348151 A1	06-05-2002
			SK 7672001 A3	03-12-2001
			TR 200101659 T2	22-10-2001
			TW 490444 B	11-06-2002
			WO 0034184 A1	15-06-2000
			KR 2000047427 A	25-07-2000
			ZA 200105137 A	23-09-2002
GB 1227762	A	07-04-1971	DE 1771272 A1	25-11-1971
			FR 1561769 A	28-03-1969
FR 2735991	A	03-01-1997	JP 3299422 B2	08-07-2002
			JP 9071889 A	18-03-1997
			CN 1143692 A	26-02-1997
			DE 19621752 A1	02-01-1997
			FR 2735991 A1	03-01-1997

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

Intern. Application No  
**PCT/GB 03/03715**

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4529670	A	16-07-1985	NONE	
US 4448856	A	15-05-1984	NONE	
US 3215562	A	02-11-1965	NONE	